

8.6 Solving Equations w/ Radicals

Notes

① Solve. $\sqrt{x+1} = 7$

$$(\sqrt{x+1})^2 = 7^2$$

$$x+1 = 49$$

$$x+1^{-1} = 49^{-1}$$

$$x = 48$$

CK:

$$\sqrt{48+1} \stackrel{?}{=} 7$$

$$\sqrt{49} \stackrel{?}{=} 7 \checkmark$$

② $9 - \sqrt{4x+1} = 0$

$$9 - \sqrt{4x+1} = 0$$

$$\frac{-\sqrt{4x+1}}{-1} = \frac{-9}{-1}$$

$$\sqrt{4x+1} = 9$$

$$(\sqrt{4x+1})^2 = (9)^2$$

$$4x+1 = 81$$

$$\frac{4x}{4} = \frac{80}{4}$$

$$x = 20$$

CK:

$$9 - \sqrt{4(20)+1} \stackrel{?}{=} 0$$

$$9 - \sqrt{81} \stackrel{?}{=} 0$$

$$9 - 9 = 0 \checkmark$$

③ $\sqrt{4x-2} = \sqrt{3x+5}$

$$(\sqrt{4x-2})^2 = (\sqrt{3x+5})^2$$

$$4x-2 = 3x+5$$

$$4x-3x = 5+2$$

$$x = 7$$

CK $\sqrt{4(7)-2} = \sqrt{3(7)+5}$

$$\sqrt{26} = \sqrt{26}$$

④ $\sqrt{5-x} = x+1$

$$(\sqrt{5-x})^2 = (x+1)^2$$

$$5-x = (x+1)(x+1)$$

$$5-x = x^2+2x+1$$

$$5-x = x^2+2x+1$$

$$0 = x^2+3x-4$$

$$(x+4)(x-1) = 0$$

$$x = -4 \quad x = 1$$

← Notice x^2 term?
set quadratic = 0
and solve

CK: $\sqrt{5+4} = 4+1$

$$\sqrt{9} = 5 \checkmark$$

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